

IN CONGRESS, JULY 4, 1776.



They Pledged Their Lives, Fortunes And Sacred Honor!

(Editor's Note. Americans recently celebrated this country's 190th birthday. A total of 56 signers pledged "their lives, fortunes and sacred honors," to support the declaration. And what became of those hardy souls? We are indebted to the Seadrifter, a fellow Union Carbide publication, for the following facts on these tall, noble Americans.)

WHAT HAPPENED TO THE MEN WHO SIGNED THE DECLARATION OF INDEPENDENCE?

Five signers were captured by the British as traitors, and tortured before they died. Twelve had their homes ransacked and burned. Two lost their sons in the Revolutionary Army, another had two sons captured. Nine of the 56 fought and died from wounds or the hardships of the Revolutionary War.

What Manner of Men?

What kind of men were they? Twenty-four were lawyers and jurists. Eleven were merchants, four were physicians, nine were farmers and large plantation owners, men of means, well educated. But they signed the Declaration of Independence knowing full well that the penalty would be death if they were captured.

They signed and they pledged their lives, their fortunes, and their sacred honor.

Carter Braxton of Virginia, a wealthy planter and trader, saw his ships swept from the seas by the British Navy. He sold his home and properties to pay his debts, and died in rags.

Thomas McKeam was so hounded by the British that he was forced to move his family almost constantly. He served in the Congress without pay, and his family was kept in hiding. His possessions were taken from him, and poverty was his reward.

Property Destroyed

Vandals or soldiers or both, looted the properties of Ellery, Clymer, Hall, Walton, Gwinnett, Heyward, Rutledge and Middleton.

At the Battle of Yorktown, Thomas Nelson Jr., noted that the British General Cornwallis, had taken over the Nelson home for his headquarters. The owner quietly urged George Washington to open fire, which was done. The

home was destroyed, and Nelson died bankrupt.

Francis Lewis had his home and properties destroyed. The enemy jailed his wife, and she died within a few months.

John Hart was driven from his wife's bedside as she was dying. Their 13 children fled for their lives. His fields and grist mill were laid waste. For more than a year he lived in forests and caves, returning home after the war to find his wife dead, his children vanished. A few weeks later he died from exhaustion and a broken heart.

Norris and Livingston suffered similar fates.

Such were the stories and sacrifices of the American Revolution. These were not wild-eyed, rabble rousing ruffians. They were soft-spoken men of means and education. They had security, but they valued liberty more. Standing tall, straight, and unwavering, they pledged: "For the support of this declaration, with a firm reliance on the protection of the Divine Providence, we mutually pledge to each other, our lives, our fortunes and sacred honor."

Whitten, Richards Give ASTME Talk Tomorrow

Two Y-12ers will address the Knoxville-Oak Ridge Chapter of the American Society of Tool and Manufacturing Engineers this week. The meeting is set for tomorrow, Thursday, July 14, at the Oak Ridge Institute of Nuclear Studies, room 18.

L. G. Whitten, Dimensional Inspection; and J. B. Richards, Mechanical Development, will speak on "New Advances in Precision Machining."

The ASTME meeting begins at 7:30 p.m. tomorrow.

Thermonuclear's Shipley Leads Seminar Tomorrow

E. D. Shipley, Thermonuclear Division, will conduct this week's TD seminar. His topic will be "Walls."

The seminar is set for Thursday, July 14, at 9 a.m. in the TD Conference Room, Building 9201-2.

More TAT Project Details Are Released

Subjects For Students Are Spelled Out

Y-12 personnel and facilities will be used in a demonstration Training and Technology project to train unemployed workers in six different occupations.

The purpose of this pilot project, sponsored by the U.S. Department of Labor in cooperation with the U.S. Atomic Energy Commission, is to demonstrate the value of industrial facilities to vocational technical education. The project is coordinated by Oak Ridge Associated Universities.

Y-12 was chosen as the training site for this project because it is a versatile production and development facility accustomed to meeting exacting requirements on accelerated schedules for the nation's space, defense and nuclear energy programs.

J. L. Waters will coordinate Union Carbide's role in the program. Highly experienced plant engineers, technicians and craftsmen will serve as the training staff.

Courses To Be Taught

The fields to be taught include mechanical engineering, drafting, machining, electronic instrument maintenance, welding, glassblowing and physical testing. With the exception of welding, each course is 52 weeks in length. The welding course is six months long.

A typical course, one designed for electronic instrument mechanics, will consist of 700 hours of classroom work and approximately 1,300 hours of shop or laboratory work. Classroom subjects will include algebra, trigonometry, basic physics, basic electricity, magnetism and electromagnetism, tubes and transistors and basic computer circuits. Shop work will involve applied practice in fabrication, testing, trouble-shooting and equipment repair.

Admission Requirements

Trainees selected for the program should be graduates of accredited high schools or vocational school programs, or have passed satisfactorily the General Development Tests. Admission requirements will vary for specific programs. Prior applicable experience will be required for entry into advanced levels of training.

This project is part of a large program in the field of manpower development. Another phase, the training of technical and vocational teachers and training of students planning to enter vocational education, is sponsored by the U.S. Department of Education. This training phase will also be conducted in Y-12 . . . as announced in mid-June.

The projects are both coordinated by ORAU. Additional information on the training projects can be obtained by contacting Training and Technology, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, Tennessee, 37830.

PAPER WEIGHT

The 880,000 pounds of engineering prints used in building the Boeing 707 jet weighed only slightly less than the plane itself!



'THANK YOU, Sir. What does 'thereunto pertaining' mean?'

How Much Is A College Degree Worth In Cash?

How much is a college degree worth in cold cash? True, nobody's going to pay money for the sheepskin, but look underneath the certificate to see the true worth of four more years of school.

For instance, figures released by the U.S. Department of Labor show that in 1964 men with four or more years of college have a potential of lifetime earnings of \$444,000 . . . almost half a million dollars! This compares with \$303,000 for the high school graduate . . . or \$219,000 for the man with a grade school education. In other words, according to the labor department's calculations, two years ago a college degree was worth \$141,000 in lifetime earnings . . . or an average of more than \$3,000 a year!

Can't Afford It?

Before you say you can't afford a college education for your child . . . have you thought yet that you can't afford not to see that he gets the best equipment possible to face the challenges in a changing world?

With education patterns changing, the labor pattern is bound to change too.

For two years now, Y-12 Employees Federal Credit Union has provided an Educational Loan Plan, available to all members with kids of college age. Now is the time to plan that extra step to equip Junior with the proper tools of education he'll need in the technology of tomorrow's economy.

Launched enthusiastically by the board of directors of the Credit Union, the plan has already provided needed tuition, room and board for countless Y-12ers' children hard at school.

Several Plans Available

There are several plans available under the program . . . one designed to suit the needs of almost everyone. One good plan is a regular monthly contribution . . . that in ten years would be of sufficient volume to pay needed costs. Shares in the education fund are eligible for regular share dividends along with regular savings in the Credit Union.

So far so good . . . that's for a dependent that will enter college in about ten years . . . what about that bumper crop of high school graduates this year?

The Education Loan Plan is available for parents who could not, or did not, begin saving in time for the needed costs of higher education.

Assistance extended under the ELP is intended to be used for educational expenses only. Funds from the credit union for other purposes will have to be obtained through one of the other conventional type loans available.

The Credit Union will make disbursements directly to the school (or schools) upon presentation of a bill in the name of the student . . . or to a bank as a deposit from which the pupil may draw monthly expenses . . . or monthly checks payable to the parent or the student.

Life Insurance, Too

Credit Union Group Life Insurance provides coverage on one or more loans for a total not to exceed \$10,000.

Credit Union officials will be happy to discuss the Educational Loan Plan with members at any time. Hours of the service group are from 9 a.m. until 5:15 p.m. each week-day. Financial counseling is available . . . be it for education, or other purposes.

Borrowing for an education is not considered poor economics, either. As a matter of fact, it is becoming more and more profitable.

Continued on Page 4

SAFETY SCOREBOARD

The Y-12 Plant Has
Operated
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On Accident-Free Hours

The Bulletin Paul Long's Art Talents Show Many Schools And Types

Published Weekly For The
Y-12 Employees Of
UNION CARBIDE
CORPORATION



NUCLEAR DIVISION

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Have you heard the story about the merchant marine who awoke his buddy to tell him the ship was sinking?

"Hell, it's not my ship," the mariner said . . . and went back to sleep.

A successful business man recently attributed his prominence in his company to a secret formula . . . "From the time I stepped into the plant, I have pretended like the place was mine."

If Y-12 . . . or Union Carbide . . . or the Atomic Energy Commission belonged to you entirely . . . would you change your working habits? Interesting to think about, isn't it?

Cost cutting? Would you be more interested in cost-reduction if it were your money being spent?

Better production? Would you put extra effort into your job if the place were yours?

Attendance? Would you be a little more diligent about being on the job when you are supposed to be if you owned the place?

You don't have to overtax your imagination. Our plant belongs to the people of the United States . . . namely you. By lending your time and talents, you make up our company . . . so the company is yours, too. The Atomic Energy Commission belongs to the people of this country . . . their money pays the bills, supports the efforts of defense and research.

In reality, you do own the place!

Paul J. Long, Physical Testing, is more than just a "Sunday artist." He discussed his time-consuming hobby recently with the Bulletin.

It seems his artistic leanings go back as far almost as he can remember. He remembers vying with fellow students in early grade school to paint borders on the blackboards for special holidays.

His Concord home is literally stacked with oils, pastels and other media that he has done through the years. Styles and stages are abundant, too. One of

Dr. Weinberg Receives Honors From Chicago

Alvin M. Weinberg, director of Oak Ridge National Laboratory, was recently awarded the University of Chicago's highest alumni honor. For receiving the Alumni Medal, his citation read, "He has made pioneering contributions to the application of science and technology to the service of mankind. His vision and creativity, his manifest dedication to the public interest, and his intellectual integrity have made him a valued consultant and advisor to the highest levels of the national government."

HEARTS AND FLOWERS

A wife will suspect the worst if you take her candy or flowers . . . but will forgive anything if you take her out to dinner.

the particular schools that caught the immediate eye was the surrealism shown in some of the works accompanying this story. "Scientific spoof" or satire, Long calls it.

Korean War Depicted

The huge mural-type impression of the Korean War is full of symbolism . . . from fear (represented by the balding oldster emerging from the rocks) . . . to pestilence, death, the Red menace, the KKK, hope (in form of a flower growing near a missile) . . . and many others. Man's insecurity is voiced in the artist, painting from the hollow tree, who refuses to face reality. (The artist did not want to see the face he was painting.) Paul recalled at the time the painting was being done that some anarchists tried to destroy the Statue of Liberty. This is incorporated into the painting as a line of slaves seek to topple the idea of liberty. The startling depiction is called "Edge of Darkness." "It always gets a second look at shows," Paul smiled.

Another piece of surrealistic work is "Scientific Pornography," also seen with other of Long's paintings.

Back in Tellico Plains schools, Paul decided at first he wanted to be a cartoonist. He has bound works from those days, too. With the revival of Batman, and Green Hornets, etc., maybe he can still sell these works!

Mall In Rainstorm

One particular oil that also catches the eye is "The Mall," an impressionist's view of the Knox-

ville square during a rain-storm. Done with heavy strokes of the palette knife, the scene fairly sparkles with light and rainfall.

Quick pencil sketches, even photographs, help Long remember scenes for landscapes. He is working now on panorama of a Lovell Road home that has been turned into a barn.

The two Long children . . . David and Susan . . . are sometimes willing models for the Long brush.

Mrs. Long (the former Willa Mae Williams) has relinquished the walls of their home for original art. "She's a little reluctant sometimes to accept a painting, especially surrealism, but gradually she comes around. The 'Edge of Darkness' in the living room makes quite a conversation-piece," Long confided.

In Art Festival

Back in May, Paul participated in the Lenoir City Art Festival, showing some of his work on Ft. Loudon Lake. His paintings have

also been featured in sidewalk shows in Oak Ridge, Knoxville, and his work has also been on display at the Dulin Gallery of Art, Knoxville.

The "Draw Me" type advertisements in the Sunday papers once caught Long's eye . . . and he won a correspondence course from the Famous Artist School. In addition to his life-long interest in drawing and painting, he was art editor of his school paper and annual (he holds a BS degree from Tennessee Polytechnic University . . . and has done graduate work at the University of Tennessee). He frequently does covers for various scientific journals published in this area.

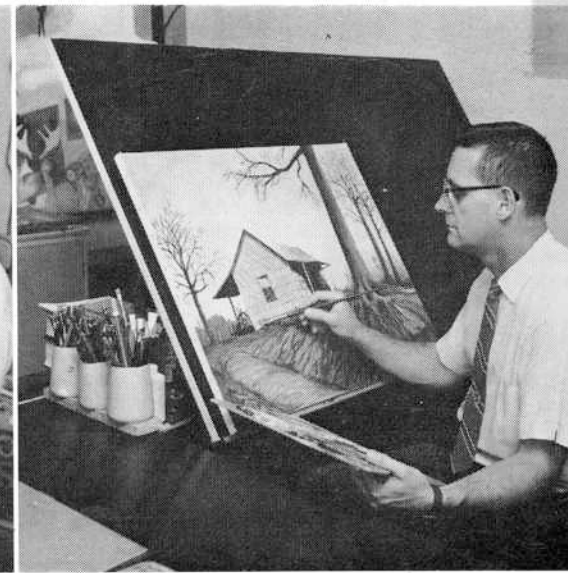
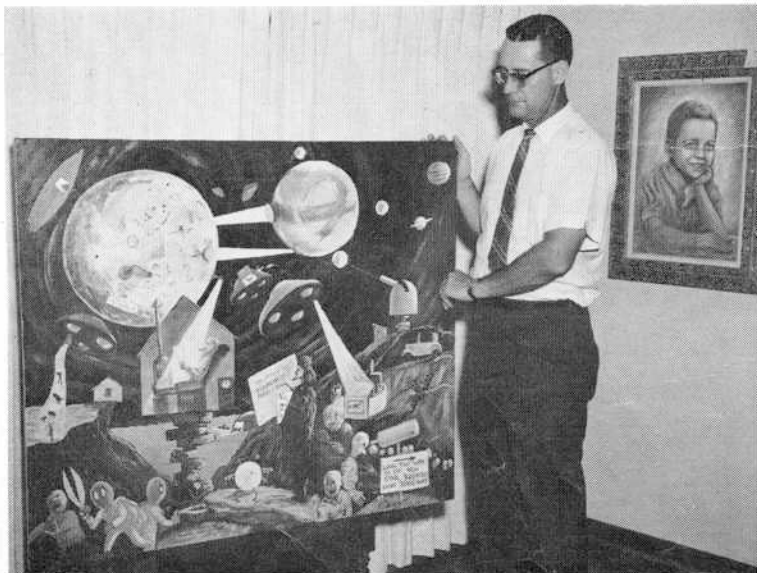
Splashing paint around means many things to many people. To Paul Long it is a pleasant outlet for his talent as well as a vent for philosophy. Churchill and Eisenhower enjoyed their Sunday painting . . . so does almost everyone else that gets bitten by the smell of oil.



EDGE OF DARKNESS is Paul Long's impression of the Korean War. Find the various symbols the artist has incorporated into the massive mural-type Dalisquesque painting.



THREE REPRESENTATIVES OF LONG'S style are seen above. He is holding "The Mall," and hanging on the wall is an autumn scene. On the floor is a neighbor's friendly basset hound.



HARD AT WORK AT his full-time hobby is Paul Long, Physical Testing. Since early childhood Long has been interested in art . . . drawing, painting . . . almost any

kind of artwork. At left, he views his satire "Scientific Pornography." In the center photo he looks over some ancient comic books he did years ago . . . and at the

right he puts the finishing touches on a polymer painting of a deserted shack on Lovell Road. Long's works were recently exhibited at Ft. Loudon.

6-13070 - 6-13078



A HUGE DRUM makes a good entry in the rough fish category of the Annual Fishing Rodeo. This big baby was pulled from the tailwaters of Ft. Loudon Lake recently by J. E. Thompson Jr., Chemical Services. Its weight remains a secret but Thompson urges other anglers to get their 'catches' in. Competition is always welcome.

Gateway Players In Classic Play

Gatlinburg's Summer Theatre visits Oak Ridge Saturday, July 16, with the classic tale of mirth and mayhem, "Arsenic and Old Lace." The Oak Ridge Community Playhouse has invited the Gateway Stock Company to perform in its theatre and announces curtain time at 8:20 p.m. Saturday.

Tickets are on sale this week at the Jackson Square Pharmacy . . . also at the Playhouse box office, beginning at 10 a.m. Saturday. Seats will not be reserved. A party will introduce the cast after the performance at the Alexander Hotel Ballroom. Refreshments and dancing will follow.

Another comedy, "Room Service," will be performed in Oak Ridge by the stock company Saturday, August 13. This will be the New York City group's third year to perform in Oak Ridge. Last year they presented "The Tender Trap," and in 1964 did "Come Blow Your Horn."

Both plays are from Gateway's summer program. Their third play is an Agatha Christie mystery "The Unexpected Guest." Two plays alternate each week, with a change on Monday and Thursday, in the Gatlinburg Civic Auditorium.

The Gateway Stock Company was organized in 1947 by John Richards, a native Knoxville and University of Tennessee graduate. Most of his cast are students or graduates of the American Academy of Dramatic Arts. Richards continues to direct the theatre group, and will also star in "Arsenic" as one of the spinster sisters — a role he developed four years ago.

Mrs. Dave Alford (he's in the Fabrication Division) was recently elected to the Board of Directors of the Playhouse. She will assist the Gateway players in her office as production manager.

Smokies Beat Europe In Trees Two To One!

There are 153 different species of trees in the Great Smoky Mountains National Park nearby. This is more than are found in any other similar area in the temperate zone. In contrast, there are only 85 types of trees on the entire European continent!

Give a pig and a boy all they want and you'll get a fine pig and a bad boy.

Recreation



Saturday, July 16

HIPPOWERED RIFLE LEAGUE, 9 a.m., Oak Ridge Sportsmen's Association.

Monday, July 18

SOFTBALL LEAGUE, beginning 6 p.m., Pinewood Park. Bio vs. Peanuts; Naughts vs. X-10 Mets; Fireguards vs. Bat Boys.

TENNIS LEAGUE: As per schedule . . . to be arranged by individual players.

Tuesday, July 19

SOFTBALL LEAGUE, beginning 6 p.m., Pinewood Park. Red Devils vs. Eagles; K-25 Mets vs. Isotopes-Reactor; Health Physics vs. K-25 Sports.

PHYSICAL FITNESS: 7:30 p.m., Oak Ridge High School Gymnasium.

Wednesday, July 20

GOLF . . . 4:30 p.m. Dead-line for entering July 23 Tournament at Niota.

Thursday, July 21

SOFTBALL LEAGUE, beginning 6 p.m., Pinewood Park. Ecobums vs. Sluggers; Braves vs. Falcons; Clowns vs. Big Shops.

HORSESHOE LEAGUE: 7 p.m., City Courts, Jackson Square.

PHYSICAL FITNESS: 7:30 p.m., Oak Ridge High School Gymnasium.

Saturday, July 23

GOLF TOURNAMENT: 6:30 a.m. Springbrook (Niota) contest.

Udall Praises UCC Waste Treatment Efforts

Stewart L. Udall, Secretary of the Interior, recently commended Union Carbide for its industry-municipal cooperation in the treatment of waste. Speaking before the annual meeting of the Manufacturing Chemists' Association in White Sulphur Springs, West Virginia, Udall stated, "Within your ranks, you have several shining examples of what can be done. And wherever you have performed creditably, the public has reacted favorably. The examples of chemical industry-municipality cooperation in waste treatment by Union Carbide at South Charleston; by American Cyanamide at Bound Brook, New Jersey; and Monsanto, Mobil Oil, and others at Monsanto, Illinois; are unique."

Rains, Holiday Slow Softballers

Action in the Softball League began Tuesday with the Bio team walloping the Sluggers, 19 to 8. Bob Stafford clouted a homer for the winning team . . . Wayne Parsons collected two for the losing squad.

The X-10 Mets drove the Y-12 Fireguards to the showers 10 to 1 . . . to make the Y-12 team a sure-bet for the cellar. Bob Steffey homered for the winning Mets.

Tuesday's final game went to the league-leading Isotopes-Reactor 26 to 1 . . . as the Clowns proved unfunny in the game. Sam Ewing and Roy Nabors were the big heroes, each homering once.

Thursday's games went out with the rains and were rescheduled for play Friday, July 8.

Two Y-12 teams collided in Friday's debut . . . the Bat Boys downing the Big Shops 21 to 15. Harold Brendle poled two homers for the losing team.

The Peanuts nudged the Naughts 27 to 8 in Friday's second foray. Frank Davis, Joe Kidd and Frank O'Donnell all homered for the winners . . . J. K. Jones for the losers.

The X-10 Mets clobbered the Falcons also Friday 22 to 7. Tom Tuck, Bob Steffey and Bob Stone all homered for the winners . . . Paul Febbo for the losing Y-12 team.

League standings follow:

Team	W	L
Isotopes-Reactor, ORNL	9	0
Braves, Y-12	7	1
Red Devils, ORNL	6	1
Bat Boys, Y-12	7	2
K-25 Mets	6	2
Health Physics, ORNL	6	2
Eagles, Y-12	5	3
K-25 Sports	5	3
Bio, ORNL	4	4
X-10 Mets	4	5
Sluggers, ORNL	3	6
Falcons, Y-12	3	6
Clowns, ORNL	2	7
Peanuts, ORNL	2	7
Naughts, ORNL	1	7
Ecobums, ORNL	1	7
Big Shops, Y-12	1	8
Fireguards, Y-12	0	8

Campbell Climbs In Tennis Race

Sam Campbell recently dropped three opponents in the Y-12 Tennis League . . . stretching his number one position considerably. He downed Bill Hackett 6-4, 6-4; then took on Ed DelGrand, defeating him 6-1, 6-1 . . . and Campbell King 6-2, 6-0.

Max Scott moved up downing King 6-4, 6-2 after dropping match number two, 6-2.

Ed DelGrande defeated Don Legacy 6-0, 6-3, dropping match two, 6-3. Legacy defeated King 6-2, 6-4. Jim Froula defeated Jim White 6-4, 6-0 . . . while falling to DelGrande 8-6, 6-3.

League standings follow:

Player	W	L
Sam Campbell	4	0
Max Scott	2	0
Ed DelGrande	2	1
Don Legacy	1	1
D. W. Hackett	1	1
James Froula	1	2
James White	0	2
Campbell King	0	3



"Couldn't you put some water in the gas, or monkey with the motor, or something so we'll get stalled real good?"



THE ORSA TEAM THAT DEFEATED THREE All-Air Force national teams line up above. In front row is A. A. Abbatiello, ORNL, who coached the team . . . and standing, from left, are A. S. Quist, J. L. Huff, E. A. Scott and G. A. Reimann.

Oak Ridgers Make Fine Showing In Holiday Firings For ORSA

The Oak Ridge Sportsman's Association High Power Rifle team fired in the Southern States long range tournament, making excellent showings. The firings were held in Oak Ridge July 3 and 4.

The ORSA Gold team consisted of Jack Huff, Y-12, A. S. Quist, G. A. Reimann and A. A. Abbatiello, ORNL and was coached by C. G. Brewster, Y-12. The team set a new range record for civilian teams posting a 975-70v total of a possible 1,000 points. This is also three points higher than any reserve or National Guard team has fired on this range.

In the 1,000-yard team match

the ORSA team also set a new civilian team record with a 385-40v total of a possible 400 points. Firing was done with Army rifle-Army sights and consisted of C. G. Brewster, G. A. Reiman, L. S. Kelley, wife of W. H. Kelley, ORNL; and Bill Alexander. Also in the 1,000-yard match the ORSA team took the Army Rifle-Iron Sight stage. Firing on this team were Reimann, Quist, Abbatiello and E. A. Scott, Y-12.

In the long range A-Course, again the ORSA team took honors. They set a new range record for civilian teams firing 1137 while the winning Air Force team posted 1150 . . . only 13 points ahead. The accomplishment here, however, is that the ORSA team defeated three of the U.S. Air Forces national teams.

Abbatiello coached the team. On this match Quist posted the second highest score of all firers including the Air Force teams and other service and National Guard teams.

Volunteer State Gave Nation Three Presidents

Although Tennessee has given the nation three presidents . . . none were born in the Volunteer State. Andrew Jackson was born in what became South Carolina in 1767; James K. Polk was born in North Carolina in 1795 and Andrew Johnson was born in Raleigh in 1808.

A good employee is a safe one.

Tee-Off Time Application For Springbrook (Niota) Tournament

Saturday, July 23

Foursome

_____, Leader

_____,

_____,

_____,

Leader's office phone _____

Home phone _____

Tee-Off Time Preferred _____

Fill out completely and return to the Recreation Office, Building 9704-2. Deadline for entering is 4:30 p.m. Wednesday, July 20. Tee-off times will be drawn the next day, Thursday, July 21, at 8:30 a.m.



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NUCLEAR DIVISION

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Mid-July, when the livin' is easy, finds more Y-12ers observing important milestones with Union Carbide Corporation. Congratulations.

20 YEARS

Cecil W. Cate, Assembly Operations, July 14.

Eugene W. Woodward, Buildings, Grounds and Maintenance Shops, July 18.

15 YEARS

Lennie C. Jeffreys, Special Services, July 13.

Randle E. Brown, Buildings, Grounds and Maintenance Shops, July 13.

Ralph H. Norman, Research Services, July 16.

Edward E. Dunn, Instrument Engineering, July 16.

Wade K. Jackson, Dispatching Department, July 16.

Raymond D. Bass, Beta Two Forming, July 16.

George W. Byrge, General Metal Fabrication Shop, July 16.

James W. Craig, H-1 Foundry, July 16.

Pauline V. Patterson, H-1 Foundry, July 17.

Elmer W. Wilder, H-1 Foundry, July 17.

Arthur P. Money, General Metal Fabrication Shop, July 17.

Neal White, H-2 and F-Area Shops, July 17.

Theodore R. McCullah, Process Maintenance, July 18.

Lathrisia P. Tilley, Chemical Services, July 19.

Alvin J. Kerley, H-1 Foundry, July 19.

Work and play safely.

ORCMA Renewal Time Is Here

The Oak Ridge Civic Music Association reminds members that renewal time is here. Charles Rosen, pianist; the Oberlin Wind Ensemble and Charles Treger, violinist; will be guest artists for the 1966-67 season.

The Oak Ridge Symphony Orchestra will perform varied works throughout the season. The Chamber Music Series has an outstanding program of three fine groups: the Early Music Quartet; the Juliard Quartet; and the Balsam-Kroll-Heifetz Trio. Coffee concerts with local artists, and a children's concert are planned. A membership pledge now will help ORCMA make its usually fine contribution to the music resources of Oak Ridge. A pledge by July 15, with billing by the committee on a later date, entitles the member to one free bonus ticket to a regular series concert of his choice.

Further information about season tickets may be obtained from Dave Eissenberg, membership chairman, Oak Ridge telephone 483-5367, or extension 3-7639.

Pitzer Heads MCA Plastics Committee

Glenn L. Pitzer, president of Union Carbide's Plastics Division, has been elected chairman of the Manufacturing Chemists' Association's Plastics Committee. The committee is made up of over 50 plastics raw materials producers, and performs educational and research functions for the industry. One current project is research on the weatherability of all plastics. Pitzer will serve a two-year term in his MCA position.

TVA Announces Nuclear Generator Plans For Area

The Tennessee Valley Authority has awarded a contract for its first nuclear power generating station — a two-unit, 2,200,000 kilowatt plant — to the General Electric Company.

Construction of the plant will begin as soon as a license is issued by the Atomic Energy Commission. Operation of the first unit is scheduled for 1970.

In a direct comparison of bids for the facilities and fuel for both nuclear and coal-burning plants, the TVA Board of Directors found that the nuclear station will provide savings exceeding \$8 million a year over the coal-burning alternative, for a total savings of about \$100 million in the 12-year period in which the cost of the fuel for the nuclear plant is guaranteed.

"The decision to build a nuclear plant is based on an exhaustive study of the alternate bids," TVA Chairman A. J. Wagner stated. "It is clear that in this case TVA can best meet its responsibility for a continuing assured supply of low-cost electric energy for the region it serves by building a nuclear plant."

Nuclear Costs Less

"Because of the great dissimilarity in the equipment and fuel, the offers TVA received were evaluated on the basis of cost per kilowatt-hour of energy produced. Total bus bar cost of energy from the nuclear plant is estimated to be 2.37 mills a kilowatt-hour, 20 per cent less than the 2.83 mills for the coal-using plant. Guaranteed average fuel cost for the nuclear plant is 1.25 mills a kwh during its first 12 years of operation, compared with 1.69 mills for the coal plant."

"A detailed report by TVA on the comparative analysis of the bids will be available."

Total cost of the nuclear plant, with installed capacity of 2,200,000 kilowatts, is estimated at \$247 million. Cost of the coal plant with 2,235,000-kwh capacity, is estimated at \$258 million. The initial nuclear fuel supply is estimated to cost \$66 million.

On Wheeler Reservoir

The new generating station will be located on the 840-acre Browns Ferry site on the north shore of Wheeler Reservoir, in Limestone County, Alabama, 10 miles northwest of Decatur.

Before construction of the nuclear plant can begin a license must be obtained from the AEC, a procedure which in the past has required from six months to a year. It involves a review of design, construction and operation plans by the AEC's Regulatory Staff and a second review by the AEC's Advisory Committee on Reactor Safeguards. Committee review is followed by still further examination which includes a public hearing, usually before the Atomic Safety and Licensing Board, where both expert testimony and members of the public can be heard. The decision of the Board is reviewed by the Atomic Energy Commissioners themselves.

TVA said it expects to submit an application to the AEC this month.

Competitive Bids Asked

TVA in late February invited manufacturers of both nuclear and conventional generating equipment to submit offers for two generating units of about a million kilowatts capacity each. The first turbogenerator is planned for operation in 1970, the other a year later. TVA has an option to cancel the second unit.

In response to its invitations,

TVA received offers from General Electric for a boiling water reactor and from Westinghouse for a pressurized water reactor.

General Electric, Westinghouse and Brown Boveri Company of Switzerland submitted bids on turbogenerators for the coal plant. Of these three, Brown Boveri's offer was the lowest and was used in making the comparison with energy produced from a nuclear powered station.

Coal-Burner Here

It was determined that with present system capacity and projected loads the most economical location for a coal-burning plant would be at a site near Cumberland City, Tennessee, 50 miles northwest of Nashville on the south bank of the new Barkley Reservoir on the Cumberland River. The delivered cost of coal for a two-unit plant at that site averaged 18.9 cents per million BTU.

Because of advancing nuclear technology, General Electric guaranteed declining fuel costs for the nuclear plant, ranging from 14.9 cents per million BTU in 1970 to 10.3 cents by the end of the 12-year warranty. The average fuel costs for the GE units amounted to 11.86 cents a million BTU.

GE will provide nuclear fuel for the plant for the first 12 years of operation at guaranteed prices, except that TVA has the right to cancel after 1974 should it find other qualified suppliers with a lower fuel cost. GE has agreed to provide TVA with all the information necessary to take competitive bids for subsequent fuel replacement.

Architect-Engineer-Builder

TVA will act as its own architect-engineer and constructor for the Browns Ferry project. It has a staff of nuclear-trained engineers which has participated with AEC in many nuclear power research and development projects over the last 15 years.

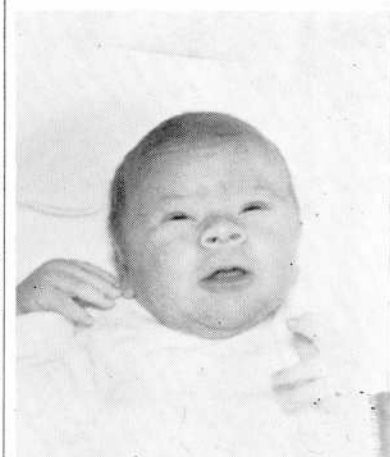
Addition of the two-unit, 2,200,000-kw nuclear plant will bring the installed generating capacity of the TVA power system to over 21 million kilowatts. The present system generating capacity is 17,149,500 kw, of which 4,221,615 kw is in hydro and 12,927,885 kw is in coal-burning steam plants. At these steam plants TVA now uses coal at the rate of about 25 million tons a year, for which it pays a delivered price of about \$100 million.

TVA's coal purchases are expected to increase over the next five years to around 30 million tons annually as the new 950,000-kw Bull Run plant (next door) and the new 1,150,000-kw Paradise unit go into operation. Bull Run . . . this year . . . Paradise in 1969. This will bring TVA's annual delivered cost of coal to well over \$120 million.

"We will continue to evaluate alternate fuel sources for future generating units to assure that the consumers of TVA power receive the benefits of all technical advances and cost reductions in fuel," Wagner said.

"In our decision to proceed with construction of a nuclear plant, TVA is employing technology which, though new to our system, has demonstrated both its safety and dependability. TVA will build and operate this nuclear plant, as it has pioneered in large conventional units and transmission in the past, so that its experience will be available for application throughout the country."

Experts expect that over 25 per cent of all new orders for electric generating equipment this year



DEREK LEE KEENEY made his debut much to the delight of parents Judy and Dale Keeney. Judy was formerly in Product Engineering . . . Dale is in Numerical Control. Derek weighed nine pounds, one ounce, and was born June 17.

College Degree

Continued from Page 1

nounced as the competition narrows. Investing in the future of our country is one of the finest uses we can put our money too. This philosophy motivated the Y-12 board to begin broadening their scope of lending money two years ago.

Future Is Youth

"The plan was worked out to help parents who haven't sufficient funds for the education of their children," one board member of the credit organization stated. "We believe in our future . . . and in the future of our youth. Upon their shoulders rest the responsibilities of tomorrow. It is our obligation to equip them as well as we can."

Stop by the office on Lafayette Drive, or call extension 3-7204 for an appointment.

Your credit union belongs to you . . . use it to its fullest degree. "Can't afford it" need not be an excuse anymore to deny your children an education.

They'll appreciate that \$3,000 added income a year.



Ride wanted from 102 Arizona Road, Oak Ridge, to Central or North Portal, straight day. Jo Roe, plant phone 3-7128, home phone Oak Ridge 483-2855.

MIT's MacKellar Sparks Physics Seminar Friday

The Physics Division seminar is announced this week as "The T-Matrix Approach to Finite Nuclei." Leading the discussion will be Allan D. MacKellar, Massachusetts Institute of Technology.

The seminar is set for Friday, July 15, at 3:15 p.m. in the East Auditorium of ORNL's 4500 building.

TINY THESIS

A school-kid recently wrote a chemical firm, "Dear Sirs, I am doing a school paper on your company. Would you please send me all the details of your rise and fall?"

will be for the nuclear type generator, up 20 per cent from last year. According to "Financial World," the proportion will reach 40 per cent by 1972 and 50 per cent by 1975.



ALAN JOHNSON AND SISTER LYNNE are the fine children of Major Forrest G. Johnson, stationed in Oklahoma. They are the four-year-old and five-week-old grand-children of H. C. Giles, Process Maintenance. (Mrs. Johnson, mother of the fine youngsters, was the former Amy Giles.)